■ **Amendments to the Claims**

1. (currently amended) A time simulation method of determining service availability
   of a communications network networks having a plurality of nodes and a
   plurality of links, comprising steps of:
   (a) selecting a link between two network nodes;
   (b) performing a simulated link failure on the selected link;
   (c) selecting a connection between two a network source node and a network
   sink node nodes;
   (d) determining and summing the unavailability and availability of the selected
   connection under the simulated link failure condition;
   (e) repeating steps (c), and (d) (a) and (b) for all connections of the network;
   and
   (f) repeating steps (a) to (e) summing the unavailability and availability of
   connections after each repetition until a predetermined number of all (or a
   decided subset of) connections have been selected, and either until either
   a simulated link failure has been simulated performed on all links of the
   network or until the summed unavailability and availability has been
   determined to converge to a constant value, whichever is earlier.

2. (original) The time simulation method according to claim 1, further comprising
   steps of:
   averaging the service availability across all connections to generate the
   service availability of the network.

3. (currently amended) The time simulation method according to claim 1,
   wherein[[:]] all the above steps are performed in response to clock increments,
   which proportionately correspond to actual times.

4. (currently amended) The time simulation method according to claim 1, wherein
   the network has corresponding nodes and links, the links of the
   communication network further having attributes in relation to their
   characteristics with respect to simulated failures failure, recovery and repair
   values processes, the method further comprising a wherein the step of
   selecting a link further comprising:
   randomly selecting a link based on the attributes of the links.

5. (currently amended) The time simulation method according to claim 4, wherein

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the attributes are in relation to their distanc , time-to-failure parameter (hereinafter called TTF), and time-to-recover/repair-(hereinafter called TTR).

6. (cancelled) A time simulation apparatus for determining service availability of mesh or other communication networks, comprising:

a network having a plurality of nodes and a plurality of links; the links having attributes relating to their characteristics with respect to simulated failure, recovery and repair mechanisms;

a mechanism for selecting connections between source and sink nodes;

a failure/recovery module for performing a simulated failure and recovery of the selected link; a mechanism for selecting a connector between source and sink nodes; and

an arithmetic mechanism for calculating availability of the selected connection.

7. (cancelled) The time simulation apparatus according to claim 6, further comprising: an averaging module for averaging the availability of connection for all possible connections in the network to generate the service availability of the network.

8. (cancelled) The time simulation apparatus according to claim 6, further comprising a clock for generating clock increments calibrated to correspond to a specific realtime interval.

9. (cancelled) The time simulation apparatus according to claim 6, wherein the network has corresponding nodes and links, the links have attributes in relation to their characteristics with respect to simulated failures, recovery and repair processes.

10. (cancelled) The time simulation apparatus according to claim 9, the apparatus further comprising a mechanism for randomly selecting a link based on the attributes of the links.

11. (cancelled) The time simulation apparatus according to claim 10, wherein the attributes are in relation to their distance.

12. (new) A computer program product, comprising:

a memory having computer-readable code embedded therein for determining service availability of a communications network having a plurality of nodes and a plurality of links comprising:

code means for selecting a link between two network nodes;

code means for performing a simulated link failure on the selected link;

code means for selecting a connection between a network source